

Uphill Struggle



The Problem

Jack and Jill have made a luxury double-seater cart, but it is very heavy to push up the hill.

Can you design a way to stop the cart from rolling back down the hill when they stop to catch their breath?

Design Brief

Design and make a vehicle that:

- can carry at least 50 g (≈ 1.75 oz) (or approximately 1 weight brick)
- has a safety feature that does not prevent the vehicle from rolling forwards

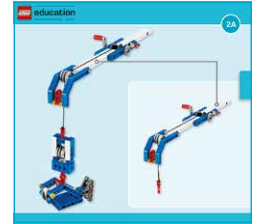
1. Make a sketch of the idea you designed and made.

2. Label the three most important parts, explaining how they work.

3. Suggest three improvements.

Need help?

Look at:



Fishing Rod



Freewheeling







Principle models building instructions booklet for wheels and axles

Problem Solving Activity: _____

Name(s): _____

Date: _____

	 BRONZE	 SILVER	 GOLD	 PLATINUM
<p>GOALS</p> <p>Design Brief: Understand the problem, develop prototypes to solve it, test those prototypes and revise your design to make it better.</p>	<ul style="list-style-type: none"> • Our design met the goals or criteria defined by the activity. <p style="text-align: center;"><input type="checkbox"/></p>	<ul style="list-style-type: none"> • We met Bronze • We tested our prototype multiple times. • We made at least one improvement. <p style="text-align: center;"><input type="checkbox"/></p>	<ul style="list-style-type: none"> • We met Silver • We made at least two improvements. <p style="text-align: center;"><input type="checkbox"/></p>	<ul style="list-style-type: none"> • We met Gold • We tested at least two different designs. • We picked the best design, tested it, and made several improvements. <p style="text-align: center;"><input type="checkbox"/></p>
<p>Creativity: Come up with inventive and creative solutions to problems. Consider multiple solutions.</p>	<ul style="list-style-type: none"> • We started the activity and have at least one possible solution that looks reasonable. <p style="text-align: center;"><input type="checkbox"/></p>	<ul style="list-style-type: none"> • We brainstormed two to three ideas. • We built a working model to solve the problem. <p style="text-align: center;"><input type="checkbox"/></p>	<ul style="list-style-type: none"> • We brainstormed more than three ideas. • We built an effective model to solve the problem. <p style="text-align: center;"><input type="checkbox"/></p>	<ul style="list-style-type: none"> • We brainstormed many ideas. • We built and tested prototypes for at least two ideas. • We built an original and effective model that solves the problem. <p style="text-align: center;"><input type="checkbox"/></p>
<p>Collaboration: Work is shared effectively and the team encourages and helps each other.</p>	<ul style="list-style-type: none"> • We sometimes worked together well but some team members did more work than others or we needed help from the teacher to resolve some disagreements. <p style="text-align: center;"><input type="checkbox"/></p>	<ul style="list-style-type: none"> • We generally worked together well, providing help and support to each other. • The work was shared fairly evenly among the group members. <p style="text-align: center;"><input type="checkbox"/></p>	<ul style="list-style-type: none"> • We worked together well, providing help and support to each other. • The work tasks were shared evenly. • We addressed issues that arose. <p style="text-align: center;"><input type="checkbox"/></p>	<ul style="list-style-type: none"> • We worked together unusually well, overcoming unexpected obstacles by working together as a team. • We actively helped and supported each other. • We addressed issues that arose with honest, constructive feedback. <p style="text-align: center;"><input type="checkbox"/></p>

Notes: